

WHAT IS CLAIMED IS:

1. A method of producing soft packets of cigarettes comprising a substantially rectangular-prism-shaped inner packet (7), and a cup-shaped outer package (11) formed by folding a sheet (9) of packing material about the relative inner packet (7); said inner packet (7) being fed continuously along a packing path (P) extending through a supply station (22) for supplying a relative said sheet (9) of packing material; said sheet (9) of packing material being removed from said supply station (22) tangentially with respect to said packing path (P), and then being fed along said packing path (P) in a given feed direction (21) together with said inner packet (7); said inner packet (7) being fed through said supply station (22) inside a relative first conveying pocket (41); said sheet (9) of packing material being removed from said supply station (22) by feeding gripping means (49) continuously through the supply station (22), along at least a portion of said packing path (P), together with said first conveying pocket (41), in said feed direction (21); the method being characterized by imparting a reverse movement to said gripping means (49) to substantially arrest the gripping means at said supply station (22) in such a position as to interfere with said sheet (9) of packing material being fed to said supply station (22); closing said gripping means (49) on to said sheet (9) of packing material; and arresting said reverse movement.

2. A method as claimed in Claim 1, wherein said sheet (9) of packing material is arrested, as it is fed to said supply station (22), by interference with said gripping means (49).

3. A method as claimed in Claim 2, wherein said sheet (9) of packing material is fed to said supply station (22) in a transverse direction (54) crosswise to said packing path (P) and to said feed direction (21).

4. A method as claimed in Claim 3, wherein said gripping means (49) are associated with said first conveying pocket (41), move with said first conveying pocket (41) along said packing path (P), and are located downstream from said first conveying pocket (41) in said feed direction (21).

5. A method as claimed in Claim 4, wherein, downstream from said supply station (22), said sheet (9) of packing material is fed, together with the relative said inner packet (7), in an engaged position engaging the inner packet (7) and in which an intermediate portion of the sheet (9) of packing material contacts a flat lateral surface (15) of said inner packet (7), and a first end portion (26) of the sheet (9) of packing material projects rearwards, in said feed direction (21), with respect to said inner packet (7).

6. A method as claimed in Claim 5, wherein, downstream from said supply station (22), said sheet (9) of packing material is smoothed on said flat lateral surface (15).

7. A method as claimed in Claim 6, wherein said inner packet (7) is substantially in the form of a rectangular prism defined axially by a first and a second opposite end surface (17, 18), and defined laterally by two major lateral surfaces (15) and two minor lateral surfaces (16) parallel to a longitudinal axis (14) of the rectangular prism; said inner packet (7) being fed along said packing path (P) with said longitudinal axis (14) crosswise to said feed direction (21); said flat lateral surface (15) being a first said major lateral surface (15); and said first end portion (26) projecting rearwards of a first said minor lateral surface (16) located rearwards in said feed direction (21).

8. A method as claimed in Claim 7, wherein said sheet (9) of packing material, once in said engaged position, is folded about the relative inner packet (7) by a first folding step wherein said sheet (9) of packing material is folded substantially into a U about said inner packet (7); a second folding step wherein said sheet (9) of packing material is folded further about said inner packet (7) to form, about the inner packet (7), a tubular package (25) comprising a tubular appendix (28) projecting from said second end surface (18); a gumming step wherein said tubular package (25) is stabilized; and a third folding step wherein said tubular appendix (28) is folded on to said second end surface (18) to obtain a relative finished said soft packet (12).

9. A method as claimed in Claim 8, wherein, during said first folding step, the sheet (9) of packing material is folded about said inner packet (7) so that said first end portion (26) contacts part of said first minor lateral surface (16); said tubular package (25) being formed by detaching said first end portion (26) from said first minor lateral surface (16) and inserting a second end portion (27), opposite said first end portion (26), of said sheet (9) of packing material partly beneath said first end portion (26).

10. A method as claimed in Claim 9, wherein said second end portion (27) is gummed along an outer surface (9a) before being inserted partly beneath said first end portion (26).

11. A method as claimed in Claim 9, wherein said first folding step is performed by transferring said inner packet (7) and the relative sheet (9) of packing material from said first conveying pocket (41) to a second conveying pocket (74).

12. A method of producing soft packets of cigarettes comprising a substantially rectangular-prism-shaped inner packet (7), and a cup-shaped outer package (11) formed by folding a sheet (9) of packing material about the relative inner packet (7); the method being characterized in that said sheet (9) of packing material is first folded into a U about said inner packet (7) so that a first end portion (26) of the sheet of packing material contacts a minor lateral surface (16) of the inner packet (7); and is then further folded about said inner packet (7) to form a tubular package (25) by detaching said first end portion (26) from the relative said minor lateral surface (16), and inserting a second end portion (27), opposite the first end portion (26), of said sheet (9) of packing material beneath said first end portion (26).

13. A method as claimed in Claim 12, wherein said second end portion (27) is gummed along an outer surface (9a) before being inserted partly beneath said first end portion (26).

14. A method as claimed in Claim 13, wherein said outer package (11) is formed by feeding the relative inner packet (7) and relative sheet (9) of packing material along a packing path (P) in a given feed direction (21) and by means of a succession of conveying pockets (41, 74); said sheet (9) of packing material being folded into a U by transferring said inner packet (7) and the relative sheet (9) of packing material from a first said conveying pocket (41) to a second said conveying pocket (74) maintained facing each other at a transfer station (24).

15. A method as claimed in Claim 14, wherein, upstream from said transfer station (24), said sheet (9) of packing material is positioned in an engaged position engaging the relative said inner packet (7) and in which an intermediate portion of the sheet (9) of packing material contacts a flat lateral surface (15) of said inner packet (7), and a first end portion (26) of the sheet (9) of packing material projects rearwards, in said feed direction (21), with respect to said inner packet (7).

16. A method as claimed in Claim 15, wherein said inner packet (7) is substantially in the form of a rectangular prism defined axially by a first and a second opposite end surface (17, 18), and defined laterally by two major lateral surfaces (15) and two minor lateral surfaces (16) parallel to a longitudinal axis (14) of the inner packet (7); said inner packet (7) being fed along said packing path (P) with said longitudinal axis (14) crosswise to said feed direction (21); said flat lateral surface (15) being a first said major lateral surface (15); and said first end portion (26) projecting rearwards of a first said minor lateral surface (16) located rearwards in said feed direction (21).

17. A method as claimed in Claim 16, wherein, immediately downstream from said transfer station (24), said sheet (9) of packing material has been folded into a U about the relative inner packet (7) with said first end portion (26) contacting said first minor lateral surface (16), an intermediate portion of the sheet of packing material contacting a first said major lateral surface (15) facing inwards of said second conveying pocket (74), a further intermediate portion of the sheet of packing material contacting a second said minor lateral surface (16), and an end portion projecting outwards from said second conveying pocket (74).

18. A method as claimed in Claim 17, wherein said end portion is folded on to a second said major lateral surface (15), facing outwards of said second conveying pocket (74), by interference with fixed folding means (81) and so that said second end portion (27) projects rearwards of said first minor lateral surface (16); said second end portion (27) being gummed, in this position, on an outer surface (9a).

19. A method as claimed in Claim 18, wherein said inner packet (7) is fed continuously along a packing path (P) extending through a supply station (22) for supplying a relative said sheet (9) of packing material; said sheet (9) of packing material being removed from said supply station (22) tangentially with respect to said packing path (P), and then being fed along said packing path (P) in a given feed direction (21) together with said inner packet (7).

20. A method as claimed in Claim 19, wherein said sheet (9) of packing material is fed to said supply station (22) in a transverse direction (54) crosswise to said packing path (P) and to said feed direction (21).

21. A method as claimed in Claim 20, wherein said inner packet (7) is fed through said supply station (22) inside a relative first conveying pocket (41) moving along said packing path (P) in said feed direction (21); said sheet (9) of packing material being removed from said supply station (22) by gripping means (49) associated with said first conveying pocket (41), moving with said first conveying pocket (41) along said packing path (P), and located downstream from said first conveying pocket (41) in said feed direction (21).

22. A method as claimed in Claim 21, wherein said sheet (9) of packing material is removed from said supply station (22) by feeding said gripping means (49) continuously along said packing path (P), together with said first conveying pocket (41), in said feed direction (21); imparting a reverse movement to said gripping means (49) to substantially arrest the gripping means at said supply station (22) in such a position as to interfere with said sheet (9) of packing material being fed in said transverse direction (54); arresting said sheet (9) of packing material, as it is fed in said transverse direction (54), by interference with said gripping means (49); closing said gripping means (49) on to said sheet (9) of packing material; and arresting said reverse movement.

23. A method as claimed in Claim 22, wherein, downstream from said supply station (22), said sheet (9) of packing material is fed, together with the relative said inner packet (7), in an engaged position engaging the inner packet (7) and in which an intermediate portion of the sheet (9) of packing material contacts a flat lateral surface (15) of said inner packet (7), and a first end portion (26) of the sheet (9) of packing material projects rearwards, in said feed direction (21), with respect to said inner packet (7).

24. A method as claimed in Claim 23, wherein, downstream from said supply station (22), said sheet (9) of packing material is smoothed on said flat lateral surface (15).

25. A method as claimed in Claim 24, wherein said inner packet (7) is substantially in the form of a rectangular prism defined axially by a first and a second opposite end surface (17, 18), and defined laterally by two major lateral surfaces (15) and two minor lateral surfaces (16) parallel to a longitudinal axis (14) of the rectangular prism; said inner packet (7) being fed along said packing path (P) with said longitudinal axis (14) crosswise to said feed direction (21); said flat lateral surface (15) being a first said major lateral surface (15); and said first end portion (26) projecting rearwards of a first said minor lateral surface (16) located rearwards in said feed direction (21).

26. A packing machine comprising a frame (33) having a front wall; a series of operating devices (2, 4, 8, 149) supported by the frame (33) and located on the front wall of the frame (33); and a crane supported by the frame (33) and for facilitating removal/assembly of the operating devices (2, 4, 8); the packing machine (1) being characterized in that first operating devices (149) are fitted to the frame (33) to move between a work position, in which the first operating devices (149) are located on the front wall of the frame (33) and in front of the crane, and a maintenance position in which the first operating devices permit free access to the crane from the front wall.

27. A machine as claimed in Claim 26, wherein said crane comprises a horizontal guide (148), and an arm running along the guide (148).

28. A machine as claimed in Claim 27, wherein said arm is movable between a rest position, in which the arm is substantially parallel to said guide (148), and a work position in which the arm is crosswise to the guide (148).

29. A machine as claimed in Claim 28, wherein said frame (33) comprises at least one beam (145) rigidly supporting said first operating devices (149) and movable with respect to the frame (33) to move the first operating devices (149) between said work position and said maintenance position.

30. A machine as claimed in Claim 29, and comprising a protective casing (101) supported by the frame (33) and for housing the operating devices (2, 4, 8, 149); the protective casing (101) comprising a panel (111) supported by said beam (145).

31. A machine as claimed in Claim 30, wherein said panel (111) is movable between an open position and a closed position by means of a first actuating device supported by said beam (145).

32. A machine as claimed in Claim 30, wherein said beam (145) is hinged to said frame (33) to oscillate, with respect to the frame (33), about a horizontal axis (146) by means of a second actuating device.

33. A packing machine comprising a frame (33) having a front wall; a series of operating devices (2, 4, 8, 149) supported by the frame (33) and located on the front wall of the frame (33); and a user interface unit (122) having a box (123), and a monitor (125) housed in the box (123); the packing machine (1) being characterized by comprising a tubular body (124) supporting said box (123) at one end and hinged, at the other end, to the base of said frame (33) to rotate about a vertical axis (129).

34. A machine as claimed in Claim 33, and comprising connecting cables for connecting said box (123) to said frame (33); the connecting cables being housed in said tubular body (124).

35. A machine as claimed in Claim 34, wherein said tubular body comprises a substantially vertical portion (127) supporting said box (123); and a horizontal portion hinged to the base of said frame (33).

36. A packing machine comprising a frame (33) having a front wall; and a series of operating devices (2, 4, 8, 149) supported by the frame (33) and located on the front wall of the frame (33); the packing machine (1) being characterized by comprising a display (132), which is supported by said frame (33), at said front wall, and is relatively large so as to display writing readable from a distance of at least 20 meters.

37. A machine as claimed in Claim 36, wherein said display (132) comprises a matrix of red LED's.

38. A machine as claimed in Claim 37, and comprising a protective casing (101) supported by the frame (33) and housing the operating devices (2, 4, 8, 149); the protective casing (101) comprising a substantially transparent panel (111) covering said display (132).

39. A cigarette packing machine comprising a straight conveyor (150) for feeding packets (151) of cigarettes in a feed direction (162); and a control station (152) located along said conveyor (150) and comprising a television camera (157) and two mirrors (159); the packing machine (1) being characterized in that said television camera (157) is mounted with its optical axis (160) perpendicular to a front wall (161) of a packet (151) of cigarettes at the control station (152); and said two mirrors (159) are located on opposite sides of said conveyor (150) to reflect to the television camera (157) a complete view of the lateral walls (164) of the packet (151) of cigarettes, a complete view of the edges (165) between the lateral walls (164) and a rear wall (166), and a view of two end portions of the rear wall (166) not resting on the conveyor (150).

40. A method of producing soft packets of cigarettes comprising a substantially rectangular-prism-shaped inner packet (7), and a cup-shaped outer package (11) formed by folding a sheet (9) of packing material about the relative inner packet (7); the method being characterized by said inner packet (7) being fed continuously along a packing path (P) extending through a supply station (22) for supplying a relative said sheet (9) of packing material; said sheet (9) of packing material being removed from said supply station (22) tangentially with respect to said packing path (P), and then being fed along said packing path (P) in a given feed direction (21) together with said inner packet (7).

41. A method as claimed in Claim 40, wherein said sheet (9) of packing material is fed to said supply station (22) in a transverse direction (54) crosswise to said packing path (P) and to said feed direction (21).

42. A method as claimed in Claim 41, wherein said inner packet (7) is fed through said supply station (22) inside a relative first conveying pocket (41) moving along said packing path (P) in said feed direction (21); said sheet (9) of packing material being removed from said supply station (22) by gripping means (49) associated with said first conveying pocket (41), moving with said first conveying pocket (41) along said packing path (P), and located downstream from said first conveying pocket (41) in said feed direction (21).